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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,052	03/22/2004	Hajime Shirakawa	P/1596-74	2685

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EXAMINER
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ALANKO, ANITA KAREN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/807,052

Applicant(s)

SHIRAKAWA ET AL.

Examiner

Anita K. Alanko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 9/21/05 election by telephone.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/22/04; 7/15/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-10, drawn to a method, classified in class 216, subclass 83.
- II. Claims 11-20, drawn to an apparatus, classified in class 134, subclass 41+.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used to conduct a different process such as to control etch bath temperature or overflow rate instead of a corrected treating time.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with James Finder on September 21, 2005 a provisional election was made without traverse to prosecute the invention of Group II, claims 11-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-10 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the

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application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Objections***

Claims 11-20 are objected to because of the following informalities: the body of the claims does not cite any features of an apparatus such as a tank or holding arm. The claims would be improved if the structure of the apparatus was explicitly cited. Appropriate correction is required.

### ***35 USC § 112***

The claim limitations in claim 10 of “storage means for storing”, “calculating means for deriving a current treating rate” and “computing means for determining a corrected treating time” invoke ¶6 because they pass the three-prong analysis. The corresponding structures are in the CPU, a memory unit for the “storage means”, a processor for the “calculating means” and a processor for the “computing means”.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shekel, Hartman and Thompson (WO 2003/027647 A1) in view of Phan et al (US 6,808,591 B1).

Shekel, Hartman and Thompson (hereinafter "Shekel") discloses an apparatus comprising:

storage means 130 (Fig.3A) for storing

(a) a relationship between use history and treating rate of the treating liquid (page 31, lines 25-26; page 32, line 4 – the relationship is the "connection" between the etch rate and spectra), and

(b) an up-to-date use history of the treating liquid (inherent since have real-time control, and multiple ages of baths are accounted for and used in the model, for example processed wafer history includes bath history, page 35, lines 3-4); and

calculating means for deriving a current treating rate from (a) and (b) (Fig.3B, step 340).

Shekel does not disclose computing means for determining a corrected treating time by extending a predetermined treating time according to said current treating. Rather, Shekel uses

the current treating rate to control the apparatus so that the treating rate stays within a predetermined range (page 40, lines 6-13).

Phan teaches that it is useful to control the amount of overtreatment (overetch) by using feedback data of etch rate (col.5, lines 22-27). Phan teaches a computing means to determine the corrected treated time by extending a predetermined treating time (the overetch time, column 4, lines 34-35 since "adjustment" includes extending the treatment time) according to said current treating (the current etch rate).

It would have been obvious to have a computing means for determining a corrected treating time by extending a predetermined treating time according to said current treating in the apparatus of Shekel and to treat the substrate for that corrected treating time because Phan teaches that this is useful to do improve control of treatment (etching) processes.

In addition, the functions defined (for storing, for deriving, for determining), the wherein clause of treating the substrates for a specific time, the limitations of claims 12-20 are intended use. The apparatus of Shekel is capable of performing these functions and therefore these functions do not patentably distinguish the claimed invention.

As to claims 12-13, the apparatus of Shekel takes into account, at least, the treated number of substrates and type of substrates (page 33, lines 26-27).

As to claims 14-16, the modified apparatus of Shekel does not disclose the specific equation cited, however this is intended use and does not patentably distinguish the claimed invention. Still further, it would have been obvious to one with ordinary skill in the art to derive the corrected treatment time from the equation cited since the models take into account aged

baths, non-aged/fresh baths, and etch rates from aged and non-aged baths in order to determine the best overtreatment time for the specific product being etched.

As to claims 17-21, Shekel discloses hydrofluoric acid (page 31, line 29), however the bath is capable of holding phosphoric acid and therefore the function of holding phosphoric acid does not patentably distinguish the claimed invention.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art show apparatuses with storage means, calculating means and computing means.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 2:30 pm (Wed until 11:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Anita K. Alanko*

Anita K Alanko  
Primary Examiner  
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